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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,460	09/26/2003	Mark Simakaski	067920-1278	3432
39905	7590	01/03/2007		
ROETZEL AND ADDRESS 222 SOUTH MAIN STREET AKRON, OH 44308			EXAMINER VERDIER, CHRISTOPHER M	
			ART UNIT	PAPER NUMBER
			3745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/672,460	Applicant(s) SIMAKASKI ET AL.	
	Examiner Christopher Verdier	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12-12-05, 5-5-06, 10-10-06.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-45,50 and 51 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1,3,5-45,50 and 51 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 12 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Applicant's Amendments dated December 12, 2005, May 5, 2006, and October 10, 2006 have been carefully considered but are non-persuasive. Claims 1, 3, 5-45, and 50-51 are pending. The specification has been amended to correct the informalities set forth in the first Office action. The claims have been amended to correct most of the informalities set forth in the first Office action. The claims have been amended to overcome most of the rejections under 35 USC 112, second paragraph set forth in the first Office action. Correction of these matters is noted with appreciation.

With regard to the objection to the drawings, amended figure 2 provided on the Replacement Sheet of Drawings filed December 12, 2005 has reference numeral "42" which is used for two different elements. Additionally, reference numeral "48" is still not shown in the drawing figures.

Applicant's argument that Girardier 3,692,422 would probably be rendered inoperative if a serrated portion was employed has been carefully considered but is non-persuasive. Girardier discloses that impeller assembly 8/9 comprises a cutter bar 28 to be coupled to the pump housing, and an impeller 9, with blades 27 of the impeller function as chopping blades due to their interaction with the cutting bar. Providing the impeller blades 27 with serrated portions as taught by Nilsson 3,295,769 would be obvious, since pumps having impellers with chopping blades that are serrated are well-known in the art, as taught by Nilsson, for example. Nilsson (figures 3 and 5) teaches a fibrous material chopping pump, whereby a centrifugal impeller 32 has chopping blades 35 that comprise a serrated portion, with the serrated portion comprising

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plural teeth, for the purpose of aiding in chopping fibrous material. Such a modification would not render the pump of Girardier inoperative. Concerning Applicant's argument that Nilsson does not teach a pump, but an apparatus for beating and disintegrating fibrous material in liquid suspension, the examiner respectfully disagrees. Column 3, lines 1-11 of Nilsson refer to a pump rotor 20, and state that that the screening device 18 will act as a centrifugal pump within the housing 12, which is provided with a substantially tangential outlet 23 for fiber passing through the screen plate. Figures 3 and 5 of Nilsson are analogous to the embodiment in figures 1 and 2 of Nilsson.

With regard to Applicant's argument that there is nothing in Tsukube or Girardier that would suggest combining these references with Nilsson's teaching of an apparatus for beating or disintegrating fibrous materials, the examiner respectfully disagrees. Pumps having impellers with chopping blades that are serrated are well-known in the art, and it would be obvious to combine apply the teachings of Nilsson of a pump having chopping blades 35 that comprise a serrated portion would be obvious, for the purpose of aiding in chopping fibrous material or any material in the pump.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "42" has been used to designate both a screw and an annular spacer in figure 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet

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should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "48". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 39-45 and 50-51 are objected to because of the following informalities:
Appropriate correction is required.

In claim 39, the second to last line, "." should be deleted.

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In claim 45, last line, "cutting" should be changed to -- cutter --.

In claim 50, line 7, "which" should be deleted.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16-18, 23-25, 29-30, 33-35, and 40-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 16, lines 2-3, "a chopping blade that extends from the impeller in a direction generally parallel to" appears to be a double recitation of the previously recited chopping blade. In claim 16, line 3, "a central axis of rotation of the impeller" appears to be a double recitation of the previously recited central axis of the impeller. In claim 17, lines 1-2, "the chopping blade comprises a serrated portion to be rotated adjacent to the cutter bar" is a double recitation of these limitations in claim 15. In claim 23, lines 1-2, "a chopper blade" appears to be a double recitation of the chopping blade recited in claim 22. In claim 24, lines 1-2, "a serrated portion that is to be rotated adjacent to the cutter bar as the impeller is rotated" appears to be a double recitation of these limitations in claim 22. In claim 29, line 2, "cutter blade" is inaccurate and should be changed to -- cutter bar --. In claim 33, lines 1-2, "a chopping blade that extends from the impeller in a direction generally parallel to" appears to be a double recitation of the previously recited chopping blade. In claim 33, lines 2-3, "a central axis of rotation of the impeller" appears to be a double recitation of the previously recited central axis of the impeller. In claim 34, lines 1-2, "a serrated portion that is to be rotated

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adjacent to the cutter bar during rotation of the impeller” appears to be a double recitation of these limitations in claim 31. In claim 40, lines 1-2, “a chopping blade that extends from the impeller in a direction generally parallel to” appears to be a double recitation of the previously recited chopping blade. In claim 40, lines 2-3, “a central axis of rotation of the impeller” appears to be a double recitation of the previously recited central axis of the impeller. In claim 41, lines 1-2, “a serrated portion that is to be rotated adjacent to the cutter bar during rotation of the impeller” appears to be a double recitation of these limitations in claim 39.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 5-6, 9-10, 13-14, 15-19, 21, 22-27, 29-30, 31-36, 38, 39-43, 45, and 50 (as far as claims 16-18, 23-25, 29-30, 33-35, and 40-42 are definite and understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukube 4,076,179 in view of Nilsson 3,295,769. Tsukube 4,076,179 (figures 6-8) discloses an impeller assembly substantially as claimed, including an impeller assembly 1 to be installed in a pump having a pump housing 2 for enclosing a pumping chamber 19, an inlet flange near 17 through which a fluid is to be introduced into the pumping chamber at a first pressure, an unnumbered outlet flange through which the fluid is to be discharged from the pumping chamber at a second pressure, and a rotatable shaft 13 that is to be operatively coupled to a pump driving device (14', see figure 1), the impeller assembly comprising a cutter bar 30/33 to be coupled to the pump housing adjacent to the inlet flange, and an impeller 1 for imparting a centrifugal force on fluid entering the pumping chamber, the impeller being mountable on the shaft at a distance from the cutter bar when the cutter bar is coupled to the pump housing to form a clearance between the impeller and the cutter bar, wherein the impeller comprises a concavity near 9 shaped to direct at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar (see figure 3, noting vortex A). The blades 10 of the impeller function as chopping blades due to their interaction with the cutting bar, and extend from the impeller in a direction generally parallel to a central axis of the impeller. The impeller comprises a surface in a plane extending radially from a central axis to oppose the inlet flange, and chopping blade 10 having a curved member normal to the plane, with the curved member being shaped to create a vortex when rotated and comprises an edge/distal edge to be rotated about the central axis adjacent to the cutter bar. The cutter bar is adjustably coupled to the pump housing

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between the inlet flange and the impeller to allow adjustment of the clearance between the chopping blade and the cutter bar, via bolts 34. The clearance is suitably sized such that rotation of the impeller adjacent to the cutter bar imparts a shearing force on objects entrained in the fluid entering the pump chamber. The inlet port and outlet port both function as inspection ports, which permit observation of the clearance between the impeller and the cutter bar, via manual inspection or a borescope. The impeller comprises a surface in a plane extending radially from a central axis to oppose the inlet flange, and a chopping blade 10 having a curved member normal to the plane, wherein the curved member is shaped to create a vortex A when rotated and comprises an edge to be rotated about the central axis adjacent to the cutter bar. Plural fasteners 34 are provided for coupling the cutter bar to the pump housing adjacent the inlet flange. The inspection port is provided to the inlet flange. Also disclosed is a method for operating the pump, the method comprising receiving the fluid through the inlet flange, rotating the impeller adjacent to the cutter bar to chop objects entrained in the fluid, and directing at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar.

However, Tsukube does not disclose that the chopping blade comprises a serrated portion that passes adjacent to the cutter bar 30/33 during impeller rotation, with the serrated portion comprising plural teeth.

Nilsson (figures 3 and 5) shows a fibrous material chopping pump, whereby a centrifugal impeller 32 has chopping blades 35 that comprise a serrated portion, with the serrated portion

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comprising plural teeth, for the purpose of aiding in chopping fibrous material or any material passing through the pump.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the impeller assembly of Tsukube such that the chopping blade comprises a serrated portion comprising plural teeth, as taught by Nilsson, for the purpose of aiding in chopping fibrous material or any material passing through the pump.

Claims 1, 3, 6-13, 22-30, and 50-51 (as far as claims 23-25 and 29-30 are definite and understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Girardier 3,692,422 in view of Tsukube 4,076,179 and Nilsson 3,295,769. Girardier discloses an impeller assembly substantially as claimed, including impeller assembly 8/9 to be installed in a pump having a pump housing 2 for enclosing an unnumbered pumping chamber, an inlet flange near 1 through which a fluid is to be introduced into the pumping chamber at a first pressure, an unnumbered outlet flange near 5, 7 through which the fluid is to be discharged from the pumping chamber at a second pressure, and a rotatable shaft 15 that is to be operatively coupled to a pump driving device, the impeller assembly comprising a cutter bar 28 to be coupled to the pump housing adjacent to the inlet flange, and an impeller 9 for imparting a centrifugal force on fluid entering the pumping chamber, the impeller being mountable on the shaft at a distance from the cutter bar when the cutter bar is coupled to the pump housing to form a clearance between the impeller and the cutter bar. The blades 27 of the impeller function as chopping blades due to their interaction with the cutting bar, and extend from the impeller in a direction generally parallel to a central

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axis of the impeller. The impeller comprises a surface in a plane extending radially from a central axis to oppose the inlet flange, and a curved member 27 normal to the plane that functions as a chopping blade, with an edge to be rotated about the central axis adjacent to the cutter bar. The cutter bar is adjustably coupled to the pump housing between the inlet flange and the impeller to allow adjustment of the clearance between the chopping blade and the cutter bar, via screw 31 and nut 32. The clearance is adjustable externally of the pump housing, without disassembling the pump housing. The clearance is suitably sized such that rotation of the impeller adjacent to the cutter bar imparts a shearing force on objects entrained in the fluid entering the pump chamber. The inlet port 4 and outlet port 5 both function as inspection ports, which permit observation of the clearance between the impeller and the cutter bar, via manual inspection or a borescope. Plural fasteners 31, 32 are provided for coupling the cutter bar to the pump housing adjacent the inlet flange. The inspection port is provided to the inlet flange. Girardier also discloses a method for operating the pump, the method comprising receiving the fluid through the inlet flange, and rotating the impeller adjacent to the cutter bar to chop objects entrained in the fluid. The clearance may be observed through the inspection port 4.

However, Girardier does not disclose that the impeller comprises a concavity shaped to direct at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar (claims 1 and 22), does not disclose that the curved member is shaped to create a vortex when rotated (claim 14), does not disclose directing at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar (claim 50), and does not disclose observing the clearance between the

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cutter bar through the inspection port and adjusting a position of the cutter bar to create a suitably sized clearance (claim 51).

Girardier also does not disclose that the chopping blade comprises a serrated portion that passes adjacent to the cutter bar 28 during impeller rotation, with the serrated portion comprising plural teeth.

Tsukube (figures 6-8) shows a pump having a cutter bar 30/33, and an impeller 1 for imparting a centrifugal force on fluid entering a pumping chamber, with a clearance formed between the impeller and the cutter bar, wherein the impeller comprises a concavity near 9 shaped to direct at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar (see figure 3, noting vortex A), with the impeller having a curved member 10 that is shaped to create the vortex when rotated, for the purpose of improving pumping head and avoiding pump clogging due to fibrous solid matter.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the pump of Girardier such that it includes a concavity shaped to direct at least a portion of the fluid entering the pumping chamber generally toward the clearance between the impeller and the cutter bar, with the curved member being shaped to create a vortex when rotated, and such that at least a portion of the fluid entering the pumping chamber is directed generally toward the clearance between the impeller and the cutter bar, as taught by

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Tsukube, for the purpose of improving pumping head and avoiding pump clogging due to fibrous solid matter.

Nilsson (figures 3 and 5) shows a fibrous material chopping pump, whereby a centrifugal impeller 32 has chopping blades 35 that comprise a serrated portion, with the serrated portion comprising plural teeth, for the purpose of aiding in chopping fibrous material or any material passing through the pump.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified impeller assembly of Girardier such that the chopping blade comprises a serrated portion comprising plural teeth, as taught by Nilsson, for the purpose of aiding in chopping fibrous material or any material passing through the pump.

Concerning the recitation in claim 51 of observing the clearance between the cutter bar through the inspection port and adjusting a position of the cutter bar to create a suitably sized clearance, it would have been further obvious to a person having ordinary skill in the art to perform this, because the clearance is viewed directly through the inlet/inspection port 4, and one of ordinary skill in the art would have known that when the cutter blade 28 contacts the impeller blades 27, the clearance must be increased, because one of ordinary skill in the art would not operate the pump with cutter blade 28 contacting the impeller blades 27.

Claims 15-20, 31, 33-37, and 39-44 (as far as claims 16-18, 33-35, and 40-42 are definite and understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Girardier 3,692,422 in view of Nilsson 3,295,769. Girardier discloses an impeller assembly 8/9 substantially as claimed, to be installed in a pump having a pump housing 2 for enclosing an unnumbered pumping chamber, an inlet flange near 1 through which a fluid is to be introduced into the pumping chamber at a first pressure, an unnumbered outlet flange near 5, 7 through which the fluid is to be discharged from the pumping chamber at a second pressure, and a rotatable shaft 15 that is to be operatively coupled to a pump driving device, the impeller assembly comprising a cutter bar 28 to be coupled to the pump housing adjacent to the inlet flange, and an impeller 9 for imparting a centrifugal force on fluid entering the pumping chamber, the impeller being mountable on the shaft at a distance from the cutter bar when the cutter bar is coupled to the pump housing to form a clearance between the impeller and the cutter bar. The blades 27 of the impeller function as chopping blades due to their interaction with the cutting bar, and extend from the impeller in a direction generally parallel to a central axis of the impeller. The cutting bar is adjustably coupled to the pump housing between the inlet flange and the impeller to allow adjustment of the clearance between the chopping blade and the cutter bar, via screw 31 and nut 32. The clearance is adjustable externally of the pump housing. The clearance is suitably sized such that rotation of the impeller adjacent to the cutter bar imparts a shearing force on objects entrained in the fluid entering the pump chamber. The inlet port 4 and outlet port 5 both function as inspection ports, which permit observation of the clearance between the impeller and the cutter bar, via manual inspection or a borescope. Plural fasteners

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31, 32 are provided for coupling the cutter bar to the pump housing adjacent the inlet flange.

The inspection port is provided to the inlet flange.

However, Girardier does not disclose that the chopping blade comprises a serrated portion that passes adjacent to the cutter bar 28 during impeller rotation, with the serrated portion comprising plural teeth.

Nilsson (figures 3 and 5) shows a fibrous material chopping pump, whereby a centrifugal impeller 32 has chopping blades 35 that comprise a serrated portion, with the serrated portion comprising plural teeth, for the purpose of aiding in chopping fibrous material or any material passing through the pump.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the impeller assembly of Girardier such that the chopping blade comprises a serrated portion comprising plural teeth, as taught by Nilsson, for the purpose of aiding in chopping fibrous material or any material passing through the pump.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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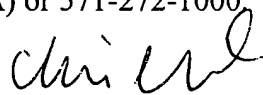
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C.V.
December 21, 2006


Christopher Verdier
Primary Examiner
Art Unit 3745